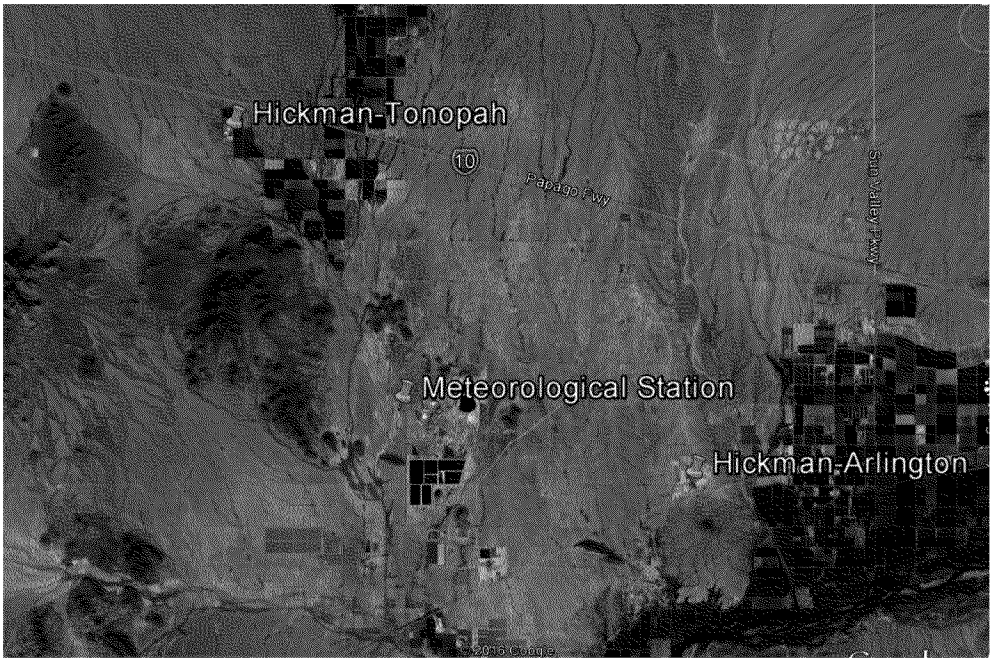
Summary of NH_3 and H_2S preliminary Modeling for Hickman

1. Location of Facilities



2. Emissions Estimation

Emissions of NH3

	No. of birds	Emission Factor (g /day/head)	Emisison Rate (g/day)	Emission Rate (g/s)
Tonopah	3072000 (hens)	0.282	866,304	10.027
Arlington	3718244 (hens)	0.282	1,048,545	12.136
	2157917 (pullets)	0.282	608,533	7.043

Emissions of H2S

	No. of birds	Emission Factor (mg /day/head)	Emisison Rate (g /day)	Emission Rate (g/s)
Tonopah	3072000 (hens)	2	6,144	0.071
Arlington	3718244 (hens)	2	7,436	0.086
	2157917 (pullets)	2	4,316	0.050

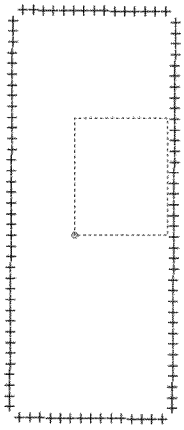
- Birds data are from: Court document Case 2:16-cv-03319-JZB
- Emission factors are from: Ji-Qin Ni, Claude A. Diehl, Li-Long Chai, Bill W. Bogan, Erin L. Cortus, Teng Teeh Lim, and A.J. Heber. 2010. National Air Emissions Monitoring Study: Emissions Data from Two Manure Belt Layer Houses in Indiana - Site IN2B. Final Report. Purdue University, West Lafayette, IN, July 2.

3. Meteorological Data

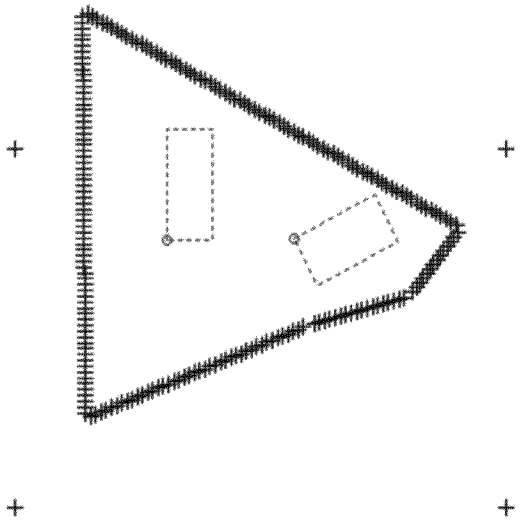
Five-years of meteorological data collected from Palo Verde Nuclear Power Plant

4. Source Layout and release parameters

Tonopah Facility: Modeled as an area source with a release height of 1.5 m

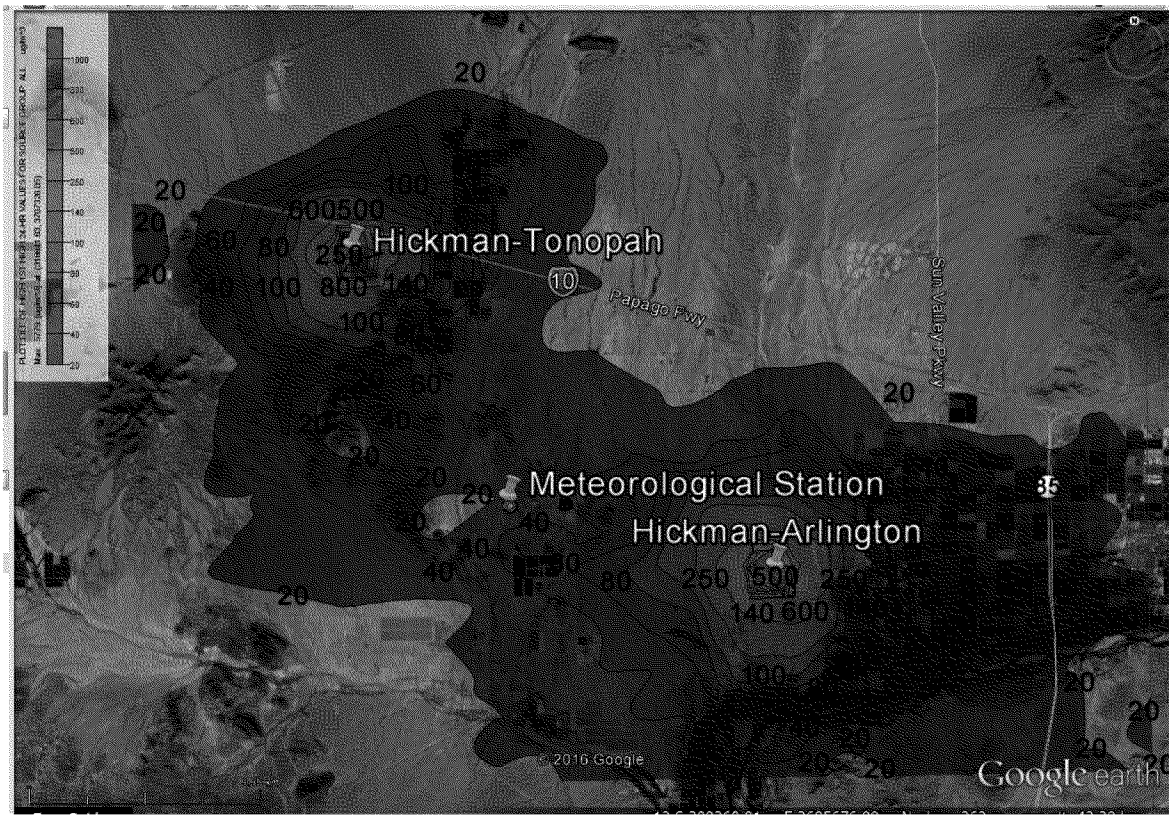


Arlington Facility: Modeled as two area sources with a release height of 1.5 m



NOTE: due to the lack of detailed source information, the parameters were simplified

5. Results of NH3 Concentrations



24-hour Concentration

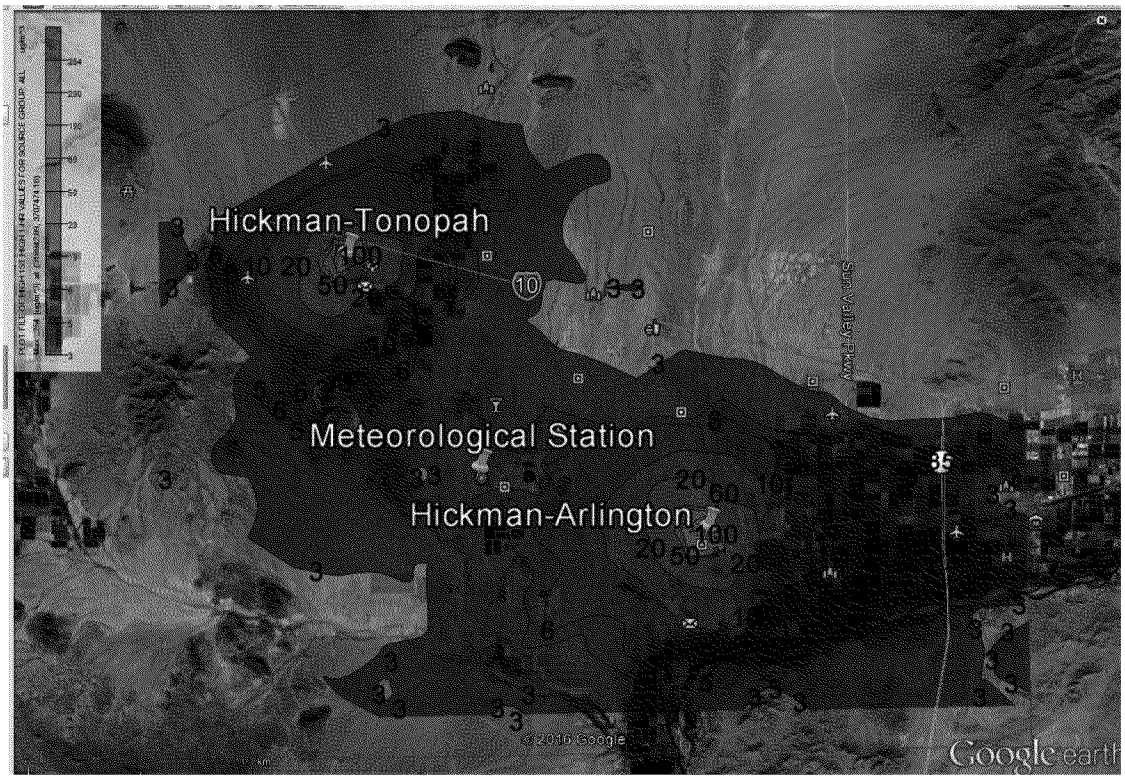
AAAQG Standard: 140 µg/m3, 24 hour

MRL (Minimal Risk Level): 1.7 ppm (1,224 µg/3), derived for acute-duration inhalation exposure (14 days or less)

Maximum modeled 24-hour concentration at fenceline: 5,780 µg/m3 (fenceline of the Tonopah facility)

Maximum modeled 24-hour concentration at the nearest residential area: ~ 300 µg/m3 (1.2 km east side of the Tonopah facility).

6. Results of H_2S Concentration



H_2S standard: 0.03 ppm (30 ppb = 42 ug/m3), 30 minutes, occupied space

Maximum modeled 1-hour concentration at fenceline: 254 µg/m3 (fenceline of the Tonopah facility)

Maximum modeled 1-hour concentration at the nearest residential area: ~ 60 µg/m3 (1.2 km east side of the Tonopah facility).